APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/500,304	02/08/2000	Francoise Groliere	PHF-99,508	2404

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EXAMINER
LAROSE, COLIN M

ART UNIT	PAPER NUMBER
2623	

DATE MAILED: 09/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

	Application No.	Applicant(s)
Office Action Summary	09/500,304	GROLIERE, FRANCOISE
	Examiner	Art Unit
	Colin M. LaRose	2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) _1-6_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) _1-6_ is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☒ All b) ☐ Some * c) ☐ None of:

      1. ☒ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
         application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _5,7_ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Pre-Amendment

1.   Applicants' pre-amendment filed 8 February 2000, has been entered and made of record.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent

6,236,764 by Zhou and U.S. Patent 5,796,875 by Read.

Regarding claim 1, Zhou discloses a method (figure 5) of decoding data representing a

sequence of pictures previously divided into blocks and coded, comprising, for each successive

picture, at least the steps of:

decoding said data (i.e. image data is input from a decoder as in figure 4);

filtering the decoded data (figure5: filtering step 107 via step 110 for the chrominance

components);

said filtering step being applied to at least one pixel (e.g. $a_{0,7}$, figure 6) component of a

selected segment (e.g. segment [$a_{0,7} : b_{0,0}$], figure 6) of consecutive pixels located on a single line

or column of the current picture and on both sides of a boundary between two blocks (i.e. blocks

A and B, separated by boundary 122), so that the boundary divides the segment into two parts,

wherein said filtering step is applied only if the pixels at the underline boundary underline have chrominance components that agree with a similarity criterion (Zhou calculates a "boundary value" (eq. 13, column 12) from the pixels that lie along the boundary; essentially, the boundary value is a measure of the similarity between the eight pixels on either side of the boundary; the at least one pixel is filtered (107, figure 5 and column 12, lines 48-61) only if the boundary value meets a similarity criterion (106, figure 5), i.e. the pixels are substantially similar; Zhou performs filtering for chrominance at step 110, figure 5).

Zhou discloses that the boundary value is derived from an average difference between all of the pixels that lie along the boundary (see eq. 5, column 11). Therefore, Zhou does not directly compare the chrominance components of the "two pixels" at the ends of said segment for similarity, as claimed.

Read discloses a similar de-blocking system that reduces blocking artifacts based on the similarity of pixels on either side of image blocks. In particular, Read discloses a simplified method of comparing boundary pixels for similarity. In Read's method, blocking artifacts are determined by directly comparing pixel pairs rather than through averaging over a boundary region (column 3, lines 16-41: "at step 210, the first pair of boundary pixels is examined..."). A pixel segment B-C, figure 3, is comprised of two pixels B and C, which are one either side of a boundary. The pixels B and C are then compared in order to determine the presence of any blocking artifacts. B and C are only filtered if their components agree with a similarity criterion (215, figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Zhou by Read to compare "the two pixels" at the ends, as claimed, rather than

comparing averages of boundary regions, since Read discloses that comparing the boundary

pixels on a pairwise basis produces simplified computations that are able to be carried out in real

time (column 5, lines 2-10).

Regarding claim 2, Zhou, as modified by Read, teaches the filtering step (Zhou: figure 5,

filtering step 107 via step 110) comprises:

comparing the respective chrominance components of the two pixels (Read: 215, figure

2: two pixels are compared); and

filtering only if the difference between said respective chrominance components is lower

than a predetermined threshold (Read: 235, figure 2: filtering is only carried out if the boundary

pixels' (chrominance) components are substantially similar, as determined by step 215).

Regarding claim 3, Zhou, as modified by Read, teaches the filtering step (Zhou: figure 5,

filtering step 107) is applied only if the two pixels at the ends of a part of said segment (i.e. both

pixels B and C in figure 3 of Read are at the end of one part of the segment) have luminance

components that agree with a similarity criterion (Read: 235, figure 2: filtering is only carried out

if the boundary pixels' (luminance) components are substantially similar, as determined by step

215).

Regarding claim 4, Zhou, as modified by Read, teaches the filtering step (Zhou: figure 5,

filtering step 107) is applied only if, for each part of the segment, the two pixels at the ends of

said segment (i.e. pixels B and C) have luminance components that agree with a similarity

criterion (Read: 235, figure 2: filtering is only carried out if the boundary pixels' (luminance)

components are substantially similar, as determined by step 215).

Regarding claim 5, Regarding claim 4, Zhou, as modified by Read, teaches the filtering

step (Zhou: figure 5, filtering step 107) is applied only if the two consecutive pixels of said

segment located on each side of the boundary (i.e. B and C are consecutive pixels located on

either side of the boundary) have luminance components that agree with a similarity criterion

(Read: 235, figure 2: filtering is only carried out if the boundary pixels' (luminance) components

are substantially similar, as determined by step 215).

Regarding claim 6, Zhou discloses a device (figure 4) of decoding data corresponding to

a sequence of pictures previously divided into blocks and coded, comprising:

means for decoding the coded data (i.e. image data is input from a decoder); and

means (processor 88, figure 4) for filtering a selected segment of consecutive pixels (e.g.

segment $[a_{0,7} : b_{0,0}]$, figure 6) located on both sides of any boundary between two blocks, with at

least one pixel on each side of the boundary,

wherein the device also comprises switching means (e.g. 106, figure 5, as implemented

by processor 88, figure 4) for replacing said filtering means by a direct connection if the pixels at

the boundary have chrominance components that do not agree with a similarity criterion.

Zhou, as stated above for claim 1, does not directly compare the chrominance

components of the "two pixels" at the ends of said segment for similarity, as claimed.

Read discloses a similar de-blocking system that reduces blocking artifacts based on the

similarity of pixels on either side of image blocks. In particular, Read discloses a simplified

system of comparing boundary pixels for similarity. In Read's system, boundary artifacts are

determined by directly comparing pixel pairs rather than through averaging over a given region

(column 3, lines 16-41: "at step 210, the first pair of boundary pixels is examined..."). A pixel segment B-C, figure 3, is comprised of two pixels B and C, which are one either side of a boundary. The pixels B and C are then compared in order to determine the presence of any blocking artifacts. B and C are only filtered if their components agree with a similarity criterion (215, figure 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Zhou by Read to compare "the two pixels" at the ends, as claimed, rather than comparing averages of boundary regions, since Read discloses that comparing the pixels on a pairwise basis produces simplified computations that are able to be carried out in real time (column 5, lines 2-10).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colin M. LaRose whose telephone number is (703) 306-3489. The examiner can normally be reached Monday through Thursday from 8:00 to 5:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au, can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600 Customer Service Office whose telephone number is (703) 306-0377.

CML

Group Art Unit 2623

9 September 2003

AMELIA M. AU
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